This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A system for the non-contact measurement of a surface of a complex part shape comprising:

a support on which the part is mounted for holding the part in a predetermined fixed position;

a large area optical sensor positioned so the part is substantially within the sensor's field of view at the distance from the sensor where the part is mounted on its support, the optical sensor measuring surface features of the part;

positioning means on which the optical sensor is installed for moving the optical sensor over the surface of the part in a non-contact manner to locate surface features of the part in a co-ordinate system;

a high resolution point sensor for locating and measuring the edges of the part, the point sensor also being installed on the positioning means and moved over the part in a non-contact manner to locate the edges of the part's surface; and,

a processor processing the surface feature information and comparing the information with corresponding information from either a master part model or a reference part to determine acceptability of the part.

2. (Canceled)

3. (Original) The system of claim 2 in which the processor also utilizes edge information from the point sensor in determining acceptability of the part.

4. (Original)The system of claim 1 further including a surface probe contacting the part, the support and the surface probe aligning the part in a co-ordinate system used for measuring the surface shape and locating the edges of the part.

5. (Original) The system of claim 2 further including means for rotating the support so the optical sensor and point sensor can measure surface features on all sides of the part and locate the edges of the part on each side thereof.

6. (Original) The system of claim 5 wherein the part is fixed in place and the positioning means moves relative to the part to obtain surface feature and edge information about the part.

7. (Original) The system of claim 5 wherein the sensors are fixed in place and the part moves relative to the sensors to obtain surface feature and edge information about the part.

8. (Original)The system of claim 5 further including moving means for moving the part along a vertical axis to raise and lower the part relative to the sensor whereby if the part is larger in size than the optical sensor's field of view, the part can be viewed in segments by the sensors to measure all of the surface features of the part and locate the edges of the part.

9. (Original) The system of claim 5 further including means for moving the sensors along a vertical axis to raise and lower the sensors relative to the part whereby if the part is larger in size than the optical sensor's field of view, the part can be viewed in segments by the sensors to measure all of the surface features of the part and locate the edges of the part.

10. (Original) The system of claim 7 in which the moving means further moves the part along a third axis orthogonal to the other two axes to move the part closer to, or farther away from, the sensors so the part is located completely within the sensor's field of view.

11. (Original) The system of claim 7 in which the sensors are moved along a third axis orthogonal to the other two axes to move the sensors closer to, or farther away from, the part so the part is located completely within the sensor's field of view.

12. (Original) A system for the non-contact measurement of a surface of a complex part shape comprising:

a support on which the part is mounted for holding the part in a predetermined fixed position;

an area optical sensor for measuring surface features on the part;

a high resolution edge sensor for locating an edge of the part and determining its shape profile;

positioning means for moving the optical sensor and edge position sensor over the surface and edges of the part to locate surface features and edges of the part within a co-ordinate system;

moving means for moving the part relative to the respective sensors so if the part is larger in size than the optical sensor's field of view, the part can be viewed in segments by the optical sensor for the optical sensor to measure all of the surface features of the part; and,

a processor processing surface feature and edge information provided by the respective sensors and comparing the information with corresponding information from a reference of the part to determine acceptability of the part.

13. (Original) The system of claim 12 further including a surface probe contacting the part, the support and the surface probe aligning the part in a co-ordinate system used for measuring the surface shape and locating the edges of the part.

14. (Original) The system of claim 13 wherein the moving means moves the part in defined increments so to enable the part to remain aligned in the co-ordinate system.

15. (Original) The system of claim 12 further including means for rotating the support so the optical sensor and edge position sensor can measure surface features on all sides of the part and locate the edges of the part on each side thereof.

16. (Original) The system of claim 13 wherein the positioning means moves the part along a horizontal axis parallel to the sensors.

17. (Original) The system of claim 16 in which the moving means moves the part along a vertical axis to raise and lower the part, and further along a third axis orthogonal to the other two axes to move the part closer to, or farther away from, the optical sensor.

18. (Original) A method of non-contact measurement of the surface of a complex part shape comprising:

mounting the part upon a support which holds the part in a desired fixed position;

measuring surface features on the part with an optical sensor;

locating an edge of the part with an edge location sensor;

moving both the optical sensor and edge position sensor over the surface of the part to locate the surface features and edges thereof in a co-ordinate system;

moving the part relative to the respective sensors so if the part is larger in size than the optical sensor's field of view so the part can be viewed in segments by the optical sensor for the optical sensor to measure all of the surface features of the part; and,

processing surface feature and edge information provided by the respective sensors and comparing the information with corresponding information from a reference of the part to determine acceptability of the part.

19. (Original) The method of claim 18 further including rotating the support so the optical sensor and edge position sensor can measure surface features on all sides of the part and locate the edges of the part on each side thereof.

20. (Original) The method of claim 19 further including contacting the part with a surface probe, the support and the surface probe aligning the part in the co-ordinate system used for measuring the surface shape and locating the edges of the part.

21. (Original) The method of claim 18 in which the part is moved in defined increments so to remain aligned in the co-ordinate system.

22. (Original) The method of claim 21 further including moving the part along an closer to, or farther away from, the optical sensor.